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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,766	11/03/2005	Georg Stoppelmann	STOPPELMANN2	6934

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EXAMINER
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ART UNIT	PAPER NUMBER
1796	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/526,766	STOPPELMANN ET AL.	
	Examiner	Art Unit	
	JOHN USELDING	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *12-16 and 20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 17-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *12-16 and 20* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

This application contains claims 12-16 and 20 drawn to an invention nonelected with traverse in the reply filed on 8/7/2008. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxfield et al. (WO 93/04117) in view of Frank (5,217,762).

Regarding claims 1-6, 9, 11 Maxfield et al. teach a method of producing a polyamide nanocomposite from a partially crystalline polyamide such as nylon 6 or nylon 66 (page 28, lines 12-20 and examples) and organically modified layered silicates that are phyllosilicates of the three-layer type (2:1) (page 7, line 23 to page 15, line 20, examples). Maxfield et al. teach dosing the polyamide in a double screw extruder and melting it followed by adding modified layered silicate into the extruder (page 30, lines 15-37, and examples). Maxfield et al. teach that the mixing ratio of polyamide to silicate

is without limitation (page 3, line 36 to page 4, line 5). They teach examples where the modified layered silicate is less than 10% of the polyamide nanocomposite (Tables 2 and 4). They teach examples where the modified layered silicate has a final concentration of 2.5% and 2.95% (Tables 2 and 4) and Maxfield et al. teach adding the polymer as a granulate (page 7, lines 30-34).

Maxfield et al. differs from the Applicant's claim in that they add the polyamide all in one step instead of mixing part of the polyamide with the silicate and then adding the rest of the polyamide later.

The difference consists in a difference of the order of mixing the components. The selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See MPEP 2144.04. *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) (selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results); see also *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is prima facie obvious.). In the absence of unexpected results it would have been obvious to add all the polyamide at once or to add it in stages. Since the final concentration of the layered silicate is the same the total amount of the polyamide added must also be the same. The claimed method doesn't actually preclude isolating a masterbatch and then remelting. Although it appears from the specification that the applicant's invention is conducted in one singe extruder at one time the claims are not so limited.

Maxfield et al. fail to teach filtering their melt, the location of the filtration, the step the filtration occurs in, and the mesh size of the filters used.

Frank teaches a method of melt processing thermoplastic polymer such as polyamides to reduce the irregularities in extrusion (column 1, lines 16-69). They teach that inserting a filter in line after the extruder to reduce flow irregularities (column 6, lines 1-5). It would have been obvious to have placed the filter either before or after the extruder nozzle in the absence of unexpected results.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the filtration method of Frank in the process of Maxfield et al. to provide a process of producing a polyamide nanocomposite with reduced flow irregularities. It would have been obvious to have performed the melt filtration during the initial extrusion process or during a separate extrusion process. See above for the reasons why changing the order of steps is obvious in the absence of unexpected results.

Frank teach that one can modify his design depending on the composition used (column 6, lines 48-54). Since Maxfield et al. filtered their silicate at 75 microns (page 39, lines 1-10) it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the filter size at 75 microns so as to retain the benefits of Frank without causing harm to the composition of Maxfield et al.

Regarding claim 8: Maxfield et al. teach that their silicate material is exfoliated (page 3, lines 20-24; page 4, lines 25-28). Maxfield et al. teach that the average particle size of the silicate has one dimension that is less than 100 (page 5, lines 13-20)

Regarding claim 10: Maxfield et al. teach that their polyamide can be a mixture of polyamides (column 25, lines 32-34) which includes amorphous polyamides (page 26, lines 13-17).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maxfield et al. (WO 93/04117) and Frank (5,217,762) as applied to claim 1 above in view of Oswald (4,136,103).

Maxfield et al. and Frank teach what is listed above.

While Maxfield et al. does teach that the organic modifier for montmorillonite can be a phophonium salt with alkyl groups and Cl, Br, or I (page 7, line 23 to page 15, line 20) they fail to teach the exact structure as claimed.

Oswald teach a phosphonium salt modified montmorillonite (column 12, lines 34-68). It provides thermal stability and reinforcement at the same time (column 3, lines 42-46). They teach that it is modified using phosphonium salts of the formula P-R_4- (page 3, line 58). The R substituents is preferably an alky or substituted alkyl with 40 carbons (column 3, lines 65-66). The alkyl can be substituted with a Cl, Br, or I (column 4, line 8). The phrase "three alkyl or aryl residues" can be interpreted in a multitude of ways. The examiner takes the position that the applicant is referring to an alkyl group that has at least 3 carbon atoms. Any number of carbons over three can just be divided into 3 separate alkyl groups. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected at least 3 carbons from the 3-40

carbon range and substitute the alkyl with a Cl, Br, or I. Oswald also teaches montmorillonite modified by trialkyl phosphonium chlorides (column 13, lines 48-49).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the montmorillonite modified with a phosphonium salt of Oswald as the montmorillonite modified by an organic salt of Maxfield et al. to provide both reinforcement and thermal stability to their composition.

Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasue et al. (5,414,042) or Fujimoto et al. (6,255,378) or Ueda et al. (JP 2003-020401) or Saito et al. (JP 2003-073542) in view of Maxfield et al. (WO 93/04117) and Frank (5,217,762).

Fujimoto et al. teach a method of making reflectors for automobiles (column 10, lines 10-11) by injection molding layered silicates and polyamide resins (column 2, lines 27-29; column 9, lines 64-66). It is noted that the particular reflectors claimed are merely intended uses of the molding compounds. The composition of Fujimoto et al. is capable of being used in the claimed capacity.

Yasue et al. teach a method of making reflectors for automobiles (column 6, lines 40-42) by injection molding layered silicates and polyamide resins (column 2, lines 8-20; column 6, lines 17-21). It is noted that the particular reflectors claimed are merely intended uses of the molding compounds. The composition of Yasue et al. is capable of being used in the claimed capacity.

Ueda et al. teach a method of making reflectors for automobiles (0024) by injection molding layered silicates and polyamide resins (0008, 0016, 0017, 0023-0026). It is noted that the particular reflectors claimed are merely intended uses of the molding compounds. The composition of Ueda et al. is capable of being used in the claimed capacity.

Saito et al. teach a method of making reflectors for automobiles (0047) by injection molding layered silicates and polyamide resins (0001, 0012, 0046, 0051). It is noted that the particular reflectors claimed are merely intended uses of the molding compounds. The composition of Saito et al. is capable of being used in the claimed capacity.

Fujimoto et al., Yasue et al., Ueda et al., and Saito et al. fail to teach a polyamide nanocomposite produced according to claim 1.

Maxfield et al. teach what is listed above and that moldings made using their polymer composites have the advantages of increased modulus, stiffness, wet strength, dimensional stability, and heat deflection temperature, and decreased moisture absorption, flammability, permeability, and molding cycle time (page 36, lines 9-13).

Frank teach what is listed above

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the process of Maxfield et al. to make the reinforced polyamide to use as the polyamide of Fujimoto et al., Yasue et al., Ueda et al., or Saito et al. to make a sub-reflector that has the advantages of increased modulus, stiffness, wet strength, dimensional stability, and heat deflection temperature, and decreased

moisture absorption, flammability, permeability, and molding cycle time. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the filtration method of Frank in the making of the polyamide of Nagashima et al. to product a polyamide with reduced flow irregularities.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasue et al. (5,414,042) or Fujimoto et al. (6,255,378) or Ueda et al. (JP 2003-020401) or Saito et al. (JP 2003-073542) in view of of Maxfield et al. (WO 93/04117), Frank (5,217,762), and Catlin (5,819,408).

Fujimoto et al., Yasue et al., Ueda et al., Saito et al., Kojima et al., and Frank are discussed above.

Fujimoto et al., Yasue et al., Ueda et al., and Saito et al. fail to teach gas injection molding.

Catlin teaches gas injection molding of thermoplastic resins into car parts to provide variable thickness in the adjacent sections in the same mold, and produce stiff lightweight parts. This is taught as an improved alternative to injection molding (column 16, lines 29-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the gas injection molding process of Catlin during the injection molding to make the sub-reflector of Fujimoto et al., Yasue et al., Ueda et al., or Saito et al. to provide variable thickness in the adjacent sections in the same mold, and produce stiff lightweight parts.

Response to Arguments

Applicant's arguments with respect to claims 1-11 and 17-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN USELDING whose telephone number is (571)270-5463. The examiner can normally be reached on Monday-Thursday 6:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John Uselding
Examiner
Art Unit 1796

/Marc S. Zimmer/

Primary Examiner, Art Unit 1796